UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,260	08/29/2000	Yao-Ching Liu	16415-0020	9482

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SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182

EXAMINER
TSEGAYE, SABA

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/650,260	LIU ET AL.
	Examiner	Art Unit
	Saba Tsegaye	2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 August 2005_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-40_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _3-5,11-15,25,26,32 and 36-40_ is/are allowed.

6)☒ Claim(s) _1, 2, 6-10, 16, 17, 21-24, 27-31 and 33-35_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some *   c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   This Office Action is in response to the amendment filed on 8/15/05. Claims 1-40 are

pending. Claims 3-5, 11-15, 18-20, 25, 26, 32 and 36-40 are allowed.

Claim Rejections - 35 USC § 103

2.   Claims 1, 2, 6-10, 16, 17, 21-24 and 27-29 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Giroux et al. (US 2002/0089933) hereafter Giroux, in view of Blanc et al.

(6,606,300) hereafter Blanc.   Regarding claims 1, 16 and 27, Giroux discloses a method for

detecting and controlling congestion in a multi-port shared memory switch in a communications

network. As shown in Fig. 1, the system comprises inputs for receiving data traffic from a

plurality of sources (plurality of receive ports). See paragraph 0005. The system also has a

shared memory buffer having output queues configured for each of the output ports (a plurality

of transport ports...a shared memory providing a shared memory space for temporary storage of

data packets received via the receive ports). See paragraph 0006. With the output queues, it is

inherent that the system will determine to which output port a received packet is destined

(determining a destination of the transmit ports associated with said received data packet). The

system also includes local N, congestion monitoring means setting a queue length threshold for

each output queue to monitor output queue length and to provide queue congestion information

when the length of any of the output queues exceeds the queue length threshold (determining

whether the destination transmit port is currently congested by determining whether a number of

packets currently stored in the shared memory that are to be transmitted via said destination

transmit port exceeds a predetermined congestion threshold). See paragraph 0007. Giroux et al.

also discloses using any congestion control mechanism, like early packet discard, to alleviate the

congestion problem if it occurs (dropping the received packet if the destination transmit port is

currently congested). See paragraph 0004. Giroux does not expressly disclose a plurality of input

logic units with each of input logic units being associated with one of the receive ports, and with

each of the input logic units being operative to determine whether the associated receive port is

saturated.

Blanc teaches, in figs. 7, 8 and 25-27, a switching system wherein a plurality of input

logic units (511i and 9001i) with each of input logic units being associated with one of the

receive ports (1600-1900) and input ports are monitored for the level of cells that are queued in

order to determine if the level exceeds a threshold. The first signaling is performed between

PINT 511 and its attached Protocol Engine (1600) to report a **saturation** condition of the PINT

internal queue, in order to stop the reception of the data (see columns 47, lines 45-56; and

column 44, line 42- column 45, line 47). It would have been obvious to one skilled in the art at

the time of the invention to implement this feature into the system of Giroux because doing so

would make the system more reliable by preventing input congestion. Note regarding claim 1

also that Giroux discloses that a local congestion flag is set when a given output queue exceeds

the certain threshold, and the control congestion mechanisms are applied to the connection

destined to this queue. It is inherent in this statement that the system produces some sort of signal

indicating to the control congestion mechanisms that the output queue has reached the

congestion state (generate an associated output 111 signal indicative of whether said associated

transmit port is congested). Note regarding claim 1 6, it is inherent in Giroux et al. that there were

some sort of communication signals sent to the receive ports to indicate whether to drop or move

the packet to the output queues-the controlling section must have made a decision as to whether

or not to retain the packet. Furthermore, Blanc teaches a filter signal (FCR) for indicating that a

received packet is destined for a congested one of the transmit ports (see fig. 28; column 50,

lines 32-45). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate the filter signal generating technique disclosed by Blanc in

the system of Giroux. One would have been motivated to do this because sending this filter

signal and informing the system that the packet will be dropped if it' s continued to be sent will

save on sending resources that could be used for other packets.

Regarding claims 2 and 17, in looking at the computer code disclosed in between

paragraphs 0026 and 0027 of Giroux, the variable Output-length (Qi) can be considered a

"counter" (an input counter) that is compared against Queue-Threshold (Qi), which be can

considered the ("drop threshold" (drop based on a comparison between said input count value am

said drop threshold value)). Giroux also discloses that the algorithm can be nm as a background

process of can be triggered by cell or packet arrival events, so the process can be "enabled" at

any time (generate a count enable signal, and to assert the signal). See paragraph 0026.

Regarding claims 6 and 21, as mentioned previously, the computer code disclosed by

Giroux has counters that are compared against predetermined threshold values.

Regarding claim 7, ms mentioned previously, it is inherent that transmit signals or drop

signal will be generated by the system to indicate which packets to retain and send. This will

cause the certain packets to be dropped if the connection is saturated and congested.

Regarding claims 8 and 22, as mentioned previously, the "enable signal" can be invoked

at any time because the algorithm of Giroux can be nm at any time.

Regarding claims 9, and 23, as shown in Fig. 1 of Giroux et al., any one of the input ports

can be connected to any one of the outputs through the shared memory manager. Giroux et al.

does not expressly disclose that the lines are bi-directional, but it would have been obvious to

add queues on the input side, thus making the system symmetrical and bi-directional. One would

have been motivated to do this because it would have given the system in Giroux et al. more

flexibility when it came to traffic that was flowing in both directions.

Regarding claims 10 and 24, Giroux discloses that the fair share threshold is determined

by finding the product of the buffer size and the buffer threshold and dividing the product by the

number of output port queues. See paragraph 0011.

Regarding claim 28, Giroux discloses a global congestion monitoring means that

provides congestion information if the traffic to the shared memory exceeds the shared memory

buffer threshold (determining whether a currently occupied portion of the shared memory space

is greater than or equal to a predetermined threshold portion of the memory space). See

paragraph 0008. However, Giroux does not disclose the counting of packets only after it is

realized that the occupied portion is greater than or equal to the threshold portion or resetting the

counter if it is not greater than or equal to the threshold portion. Blanc teaches a particular

mechanism that monitors the current number of cells being loaded within the queue, and

compares this value to a predefined threshold. As shown in fig. 26, Blanc teaches an IN pointer

and an OUT pointer that are used for counting the number of packets received via the associated

receive port and currently stored in the shared memory (see column 46, lines 34-64). It would

have been obvious to a person of ordinary skill in the art at the time the invention was made to

implement this feature into the system of Giroux in order. One would have been motivated to do

this because there is no need to waste resources and keep a count if the level of occupancy is not

above the threshold.

Regarding claim 29, it is inherent that the input counter would be increased with each

new input and be decreased with each time one of those packets is transmitted.

3.   Claims 30, 31, and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Giroux in view of Blanc, further in view of Basso et al. (US 5,787,071), hereafter referred to as

Basso, in light of the rejection to claim 27.

Regarding claims 30 and 31, Giroux in view of Blanc does not disclose asserting a

backpressure signal when a backpressure threshold has been exceeded. However, Basso et al.

discloses generating backpressure signals when a threshold has been reached. See col. 2, lines

34-58. It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use a backpressure signal if the threshold has been exceeded. One would have been

motivated to do this because sometimes the inputs become too aggressive and simply dropping

packets would not be the most efficient way of controlling the system (i.e. it would be more

efficient to tell the input to slow down its transfers).

Regarding claims 33 and 34, as shown in Fig. 1 of Giroux, any one of the input ports can

be connected to any one of the outputs through the shared memory manager. Giroux in view of

Blanc does not expressly disclose that the lines' are bi-directional, but it would have been

obvious to add queues on the input side, thus making the system symmetrical and bi-directional.

One would have been motivated to do this because it would have given the system in Giroux in

view of Blanc more flexibility when it came to traffic that was flowing in both directions.

Regarding claim 35, as mentioned previously, Giroux discloses splitting up the memory

into equal sections to come up with the thresholds (see figure 1).

Allowable Subject Matter

4.   Claims 3-5, 11-15, 18-20, 25, 26, 32 and 36-40 are allowed.

Response to Arguments

5.   Applicant's arguments filed 08/15/05 have been fully considered but they are not

persuasive. Examiner carefully reviewed Applicant's arguments (Remarks, page 2-11). The

arguments are not deemed to be persuasive. Applicant points out the differences between the

present invention and the **Giroux et al. and Van As et al.** references. However, it is respectfully

submitted that the rejection (see Office Action mailed July 25, 2005) is based on the combined

teaching of **Giroux et al.** (US 2002/0089933) and **Blanc et al.** (US 6,606,300) references,

therefore, the rejection is maintained.

Conclusion

6.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The

examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST
October 7, 2005

JOHN PEZZLO
PRIMARY EXAMINER